

-Meeting Summary-

Day 1: September 1, 2011 - (9:00 a.m. – 4:30 p.m. PDT)

1. Welcome

The meeting was called to order at 9:00 a.m., September 1, 2011, by the Chair of the Delta Independent Science Board (ISB), Dr. Richard Norgaard. Nine members of the Delta ISB were present for the meeting: Brian Atwater, Elizabeth Canuel, Tracy Collier, Michael Healey, Edward Houde, Judy Meyer, Richard Norgaard, Vince Resh and John Wiens. Jeffrey Mount was absent from the meeting.

No new conflicts or need for new disclosures were provided by any of the present Board members.

Delta Science Program Staff in attendance:

Cliff Dahm, Marina Brand, Lauren Hastings and Gina Ford

2. Delta Stewardship Council (Council) Chair and Executive Officer Reports (Phil Isenberg and Joe Grindstaff)

The Council Chair and Executive Officer reports were presented by Phil Isenberg, Council Chair and Joe Grindstaff, Council Executive Officer. Items discussed included:

- The fifth staff draft of the Delta Plan was released in early August 2011 and will close public review on September 30.
- The release of the draft EIR for the Delta Plan is delayed to the end of September 2011.
- The Delta Plan must be reviewed by the California State Office of Administrative Law (OAL) in order to become regulations. OAL is aware of the Delta Plan and their staff has already reviewed some of the more critical language (policies which should expedite their review.
- The controversy surrounding the Delta Plan has not disappeared, but there seems to be a little less argument about what the regulations will require.
- Contractors have spent \$100 million on the Bay Delta Conservation Plan (BDCP) to date. It is expected that a total of nearly \$250 million will be spent on BDCP planning. Commitments for the next \$150 million are now being secured. Implementation of the BDCP is anticipated to require \$15-17 billion.
- The BDCP EIR is currently projected to be released July, 2012.
- The statutes require that the Council consider an economic sustainability study in the Delta Plan. Therefore, the Council will consider the Delta Protection Commission's (DPC) Economic Sustainability Plan (ESP). The Council is not required to include the ESP as part of the Delta Plan but they do need to determine its consistency with the coequal goals.

After providing the key points above, Isenberg and Grindstaff engaged in an open conversation with the Delta ISB members.

Healey expressed concern about the potential piece-meal approach to habitat restoration in the Delta and noted that projects, when looked at individually, may seem good but when viewed collectively, present issues. Grindstaff said that the BDCP appears to be using the approach that CALFED used when the Ecosystem Restoration Program was developed and therefore, is comfortable that the projects should complement one another. Healey was concerned about the lack of a landscape approach to restoration. Hastings responded that landscape level conceptual models could be incorporated into the first five-year update of the Delta Plan. Hastings also mentioned Stuart Siegel's conceptual model that has been developed for the Suisun Marsh as an example of a starting point for a Delta-wide conceptual model for restoration projects.

Meyer found that the performance measures throughout the Delta Plan were weak and that well thought out performance measures are essential for adaptive management. Isenberg said that he would greatly appreciate feedback and suggestions towards improving the performance measures throughout the Delta Plan, and that he was learning that it was a more complicated subject than he had imagined, largely due to interest in having the measures be scientifically valid. Isenberg also said that his sentiment is that measures that can be understood by the public make them more powerful and enforceable. Grindstaff stated that they know that the performance measures are incomplete and what is there is a place holder. Hastings told the Science Board that the Council would hold a public workshop on performance measures on Sept 15.

Norgaard asked about funding sources for implementing the Delta Plan. Isenberg told the Science Board that funding would be an issue. Funding priorities will need to be established. Grindstaff stated key priorities should include 1) five-year funding, using bond funds, of the subventions and special projects programs to improve levees in the Delta; 2) development of a regional flood management agency; 3) development of a regular program of levee inspection; 4) focusing ecosystem restoration on the five areas identified in the Delta Plan; 5) focusing water resource management on increased regional management and self-sufficiency; 6) broadening science to look at economics as well as biology; and 7) continuation of the BDCP.

Norgaard asked Isenberg about the use of the words 'should' and 'shall' within the context of the Recommendations and Policies for the various chapters, and what was meant by both words. Isenberg considered 'shall' to be the verb for mandatory actions (regulatory) and 'should' to be more permissive and therefore the verb to be used in recommendations.

Healey stated that he felt three issues represent the foundation for achieving the coequal goals. These are 1) Delta flow criteria coupled with regional self-sufficiency, 2) a focus on the five areas identified in the Delta Plan for ecosystem restoration, and 3) a focus on risk relative to the levees.

On the topic of definitions, several Science Board members were concerned with the word ‘reliable,’ particularly in relation to water supply, and asked both Isenberg and Grindstaff how it is defined. Isenberg responded that the Delta Plan does not contain a definition for water supply reliability. Another term that was questioned was ‘safe yield.’ Grindstaff responded that this term is usually used in reference to groundwater and connotes use without over drafting. Several of the Science Board members wanted to know if ‘reliable’ and other terms that needed clarity would be defined in a glossary. There was no clear answer if the terms would be defined in a glossary, or if that glossary would be an appendix to the Delta Plan. Isenberg said that he would be happy to receive recommendations for definitions for these terms, as they had already been extensively argued about with no clear decisions.

Hastings asked for feedback from Isenberg and Grindstaff regarding the Delta ISB’s upcoming reviews of research, monitoring and assessment programs in the Delta and if either of them had any specific recommendations regarding what they would like to see the Science Board review. Grindstaff said there is a need for a Science Plan and would appreciate suggestions on how that should tie in with the existing Interagency Ecological Program (IEP) and BDCP efforts. He also suggested reviewing the existing monitoring efforts in the Delta and making recommendations for updating the techniques and equipment that are used. Dahm added that it would be helpful to have the Delta ISB review and make suggestions on performance measures. Healey stated that a conceptual model that linked object, action and outcome would be fundamental for the Science Board to be able to make effective recommendations regarding performance measures.

3. Delta Science Program Lead Scientist Report (Cliff Dahm)

The Lead Scientist report was presented by Cliff Dahm, Delta Science Program Lead Scientist. Items he discussed included:

- Dahm’s tenure as Lead Scientist has officially ended, but he will still be available on a limited time basis (20%) of about 4 days per month. It is hoped that the new Lead Scientist will be able to start full-time in January 2012, and that Dahm would remain available through February 2012.
- Delta Science Program engagement with the Delta Plan consisted of leading the development of the Adaptive Management, Ecosystem Restoration and Water Quality chapters and contributing to other sections.

Dahm next discussed his vision for the future of the Science Program and explained that he had provided a short write-up. Dahm’s Delta Science Program vision document outlines a science program organized as four separate units. As a part of this vision, a high degree of coordination and communication among units and with other agencies and organizations will be considered essential to the success of the program. The four units include:

1. Expert Panels, Workshops, Peer Review, and Support of the Delta Independent Science Board
2. Delta Plan Early Consultations, Consistency Determinations, Planning of Adaptive Management, and Adaptive Management Implementation
3. Performance Measures, Effectiveness Evaluation, and Science Communication
4. Modeling, Analysis, Synthesis, and Integration

Atwater suggested that some of the details from Dahm's Delta Science Program vision document be included in Chapter 2 of the Delta Plan to provide more substance. Science Board members also suggested that the budget required to implement the vision be explicitly stated.

The Board reinitiated discussion of performance measures with Dahm stating that determining them is not easy especially since no specific projects are included in the Delta Plan. Dahm advised against developing long indiscriminate lists or listing trivial performance measures just for the sake of having a list.

Wiens defined performance measures as a means or method of comparing how well you are doing with what you expected to be done. The Delta Plan does not provide clear expectations or goals, so with the expectation missing it makes it difficult to come up with the best possible means to compare and contrast between that and how well you are doing at achieving the expected outcome. Therefore, expectations, based on an understanding of the dynamics of the system, need to be laid out clearly within the Delta Plan to allow for the development of effective performance measures and the application of adaptive management.

Healey said that the Delta ISB should not develop performance measures for the Delta Plan but should review them. Dahm agreed with Healey, and added that review of performance measures by the Science Board should be an ongoing integrated process. Meyer added that the Science Board should potentially be reviewing performance measures associated with the Delta Plan on a regular basis, maybe yearly.

For reporting the status of performance measures a few members mentioned the use of tools such as report cards (The Bay Institute, CalEPA) to report to the public. Dahm said that he thought a synthetic, indicator-based measure like report cards should be established using a matrix approach. Canuel added that not only should quantity be measured, but also quality. Houde cautioned that the report card approach is not always accurate, and often makes generalizations. Collier added that they are good if the scientific underpinnings are thorough. Dahm noted that budget limitations will guide what and how reporting is done.

Dahm closed the Lead Scientist report with a discussion of how he likes to report science items to the Council. In his last report, he discussed a recent paper in *Nature* (Volume: 476, Page: 128, August 2011) based on an article in *Geophysical Resource Letters*:

Kearney, M. S., J. C. A. Riter, and R. E. Turner. 2011. *Freshwater river diversions for marsh restoration in Louisiana: Twenty-six years of changing vegetative cover and marsh area*, *Geophysical Resource Letters*, 38, L16405, doi:10.1029/2011GL047847.

Abstract: The restoration of Louisiana's coastal wetlands will be one of the largest, most costly and longest environmental remediation projects undertaken. We use Landsat data to show that freshwater diversions, a major restoration strategy, have not increased vegetation and marsh coverage in three freshwater diversions operating for ~19 years. Two analytic methods indicate no significant changes in either relative vegetation or overall marsh area from 1984 to 2005 in zones closest to diversion inlets. After Hurricanes Katrina and Rita, these zones sustained dramatic and enduring losses in vegetation and overall marsh area, whereas the changes in similar marshes of the adjacent reference sites were relatively moderate and short-lived. We suggest that this vulnerability to storm damage reflects the introduction of nutrients in the freshwater diversions (that add insignificant amounts of additional sediments), which promotes poor rhizome and root growth in marshes where below-ground biomass historically played the dominant role in vertical accretion.

Dahm noted that the authors found that the failure was the result of high nutrient loads in the water used for the restoration effort (e.g., was nitrogen rich). Houde, familiar with this specific effort, stated that the larger issue was the lack of sediment and that the restoration effort was really about minimizing ongoing loss rather than “restoration”.

4. Lead Scientist Recruitment Update (Michelle Shouse)

Norgaard announced that this item would be moved to day 2 of the meeting (September 2).

5. Delta ISB discussion of fifth staff draft of the Delta Plan and draft EIR

Norgaard opened the discussion about the fifth staff draft of the Delta Plan. In an open forum, the Board discussed their individual comments on the fifth staff draft of the Delta Plan. Prior to the meeting Delta ISB members were provided assignments to work as a lead for a given chapter, or to assist.

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The following charts show Delta ISB member assignments:

5th Draft DISB member assignments

Brian F. Atwater	Lead 7, Assist 4
Elizabeth A. Canuel	Assist 2, 5, 6
Tracy K. Collier	Lead 6
Michael Healey	Lead 2, Assist 5
Edward D. Houde	Assist 2, 5

Judy Meyer	Co-lead 5
Jeffrey F. Mount	Lead 4, Assist 7
Richard B. Norgaard	Lead 1, 3, & 8
Vincent Resh	Co-lead 5
John A. Wiens	Assist 3, 5, & 8

Preface & General Overview of the Delta Plan

While the preface was not assigned to any particular member of the Delta ISB, all members had reviewed it and provided their viewpoints.

Norgaard shared his frustrations with the overall process used to develop the Delta Plan. Frustration stemmed from the multiple plans and programs that converge within the Delta Plan, determining which of those are truly part of the Plan, or those that only need to be found consistent with the Delta Plan and balancing the responsibilities assigned to other agencies. He also expressed interest in the Delta ISB reviewing the science used to develop flow criteria for the Delta and was concerned about levees and how the Delta Plan will address sea level rise. Wiens underscored the concern about levees. If a levee breaks, there will be a whole series of cascading effects that go beyond flooding. Also, the Plan does not yet address ecological risk.

- Healey agreed with other Board members that the preface was well written, and he said that most points appear to be addressed in the introduction. However, an overarching conceptual model that brings all the pieces of the Delta Plan together still needs to be developed. In his review, he focused on what seemed new, not seen in CALFED. These include more directed focus on the coequal goals throughout the whole Delta Plan.
- The deadline to complete the Plan is January 2012.
- The Plan includes some authority to stop those activities that would hinder achievement of the coequal goals.
- That authority is vested in the DSC.
- Recognition that achieving the coequal goals will require sacrifice and hardship.
- That water yield will fluctuate and therefore change the amount of water available.
- More emphasis on regional supply and self-sufficiency.
- Further discussion of the relationship between species and their water needs (flow), not just human water needs.

- A clear statement that further development within the Delta's secondary zone is not sustainable due to significant risk.
- Recognition of the relationship between upland environments and the aquatic environment.

This illustrates a significant shift from previous plans which might increase the potential for success. However, these concepts are not restated in the rest of the plan and so need to be further integrated into all of the chapters.

Meyer felt that there was a clearer discussion of adaptive management but that it is not integrated with the rest of the Plan. Houde thought that overall, the Plan is well written although he is concerned about the reliance on other plans for success. Canuel was impressed that the Delta ISB's substantive comments on previous versions were incorporated into this version of the draft. Wiens stated that it is misguided to treat the terrestrial component as being separate from the aquatic component of the landscape. Wiens was also concerned that future economic, land use and climate change drivers are not recognized in the Plan and stated that restoration ecology is a moving target. He further faulted the Delta Plan for use of terms and phrases without clarifying what is meant by them, the example he provided was use of the term 'migratory birds' which could be used to describe waterfowl, wading birds, song birds, or even raptors. The authors could have been using it as a general term regarding all migratory species, or one specific class, and it should be clear to the reader.

Chapter 1: The Delta Plan

An informative overview of the major problems of the Delta and how they interrelate is provided in this chapter. The Delta ISB found it lacking a description or discussion of the role of science in understanding the Delta and its role in finding solutions in the Delta.

Meyer thought that Science was given a "bad rap". In particular, she felt that recognition of the extensive scientific research that is being done in the Delta is missing. In the discussion of the 2100 vision there is no mention of enhanced scientific knowledge and understanding. From a biological perspective, the primary focus throughout the Plan is on fish, and attention should be given to other state or federally listed upland species or species of concern.

Atwater noted that the watershed map does not include the Tulare Lake basin as part of the Delta's watershed and therefore is incomplete. Maps contained in chapter 4 contradict the map shown in this chapter. He suggested it would be helpful to provide a similar map that shows the projected vision for 2050 and 2100. Atwater also provided comment from Mount, who was absent, via their correspondence prior to the meeting.

Mount was concerned with the use of the word ‘reliable’ in the context of water supply reliability, and felt that a definition should be provided and used consistently throughout the Delta Plan. It was also suggested that a glossary be included in the Delta Plan to provide definition of this term and others that seem to lack clarity.

The term ‘water supply reliability’ was mentioned various times throughout the Delta Plan and the Science Board members found several passages that made attempts to clarify the term, but in some cases the descriptions were not consistent with one another. Wiens noted that water reliability is defined only as human use thereby setting up a conflict.

Chapter 2: Science and Adaptive Management for a Changing Delta

This chapter provides a description of adaptive management and best available science. The Board considered it an effective synthesis of the existing literature presented in a manner that they considered instructive. The Delta ISB found the description to be lacking in specific examples. And overall, commented that the establishment, use, and maintenance of adaptive management is not yet integrated throughout the Plan. The Delta Plan needs to address how adaptive management will be used in the context of each chapter. The Board also discussed staffing needs as a key component to adaptive management.

Healey stated that while the framework for adaptive management provided would be a good fit in the Delta, that many of the State’s agencies that would be responsible for implementation do not have staff with the appropriate skills. Several Board members felt that this was a key barrier to implementing adaptive management in California government and should be explicitly stated in the Delta Plan.

Canuel found the chapter to be well written, but would like to see incorporation of adaptive management in the implementation discussions in the subsequent chapters. She also felt that there should be more use of peer review in the stages of adaptive management outlined in the conceptual model used as the framework for the chapter. Norgaard responded that including peer review at each stage of adaptive management would slow the process down thereby precluding “adapting”.

Healey would like to see further exploration of learned lessons and barriers to adaptive management that are already known. This could be done by exploring the various adaptive management programs that were initiated through CALFED efforts. Healey felt that the existing institutional memory on these adaptive management projects needs to be captured. Looking at the barriers and lessons learned from prior adaptive management efforts needs to be evaluated to see what has changed, and if those barriers have been removed. Otherwise, future attempts to implement adaptive management may be held up by the same barriers. Healey also felt that there needs to be further discussion of implementation of adaptive management.

Atwater noted that the sidebars within the chapter did not relate to the Delta, but instead other geographic locations. He suggested that tying the sidebar examples into the Delta would bring the chapter to life and allow the reader to relate to the topic. Meyer also thought the sidebar needed some extra work, and overall felt that it was just too much information crammed into one sidebar. Several mentioned that it might be best to use only one point per sidebar. It was also mentioned that there may be a benefit to having a sidebar on the topic of climate change and the expected impact it will have on the Delta.

Meyer thought it would be helpful to see performance measures incorporated into Figure 2-1, which is a conceptual model of adaptive management that illustrates the nine-step framework for adaptive management within the Delta Plan. She also felt that the discussion of regime shift in the Delta was not well done, and lacked an explanation of how Delta science and monitoring led to this understanding of a shift. Overall she would like to have seen more information about how research and scientific activities in the Delta have increased the knowledge base of the Delta, as well as how that information and understanding translated into management actions. She also said she does not ‘get’ the rolling ball analogy.

Healey commented on the discussion of the regime shift, stating that it was likely a more complicated subject than most average readers would understand easily. He suggested instead using topics like snowpack, sea level rise in the Bay, importance of ammonium, or the invasion of the Delta by the Asian clam (*Corbicula fluminea*).

Houde re-emphasized the need to use adaptive management in all portions of the Delta Plan and suggested that each policy chapter of the Plan include subsections related to adaptive management and science needs. Norgaard and Collier stated that adequate funding will be needed to implement adaptive management successfully. Atwater reiterated including a discussion of lessons learned under CALFED and listing the barriers that prevent successful implementation.

Wiens reiterated Healey’s suggestion that a discussion of problems and barriers in prior attempts at adaptive management be included within the chapter. Additionally he would like to see specific suggestions for staffing requirements and what types of backgrounds staff would need to have to be effective. Specifically he thought there would be a strong need for staff trained in both communications and science to act as “translators” of the scientific information for the policy and decision makers. Wiens also thought that monitoring needs should be mentioned in this chapter in relation to cost effectiveness – the cost of performing the monitoring vs. the information that would be obtained. Transparency is an important component and should be applied to assumptions which in turn should be included as part of the adaptive management framework.

Canuel and Wiens discussed the importance of communicating scientific information. Both found it to be an important part of the adaptive management process. Canuel felt that more peer review should be included in the adaptive management process but Wiens disagreed because peer review is a ponderous process. It would be better to include peer review of key components especially when there is controversy. Canuel requested that peer review of the end product be added to Table 2-1.

Several Board members asked about the communications staff working in the Delta Science Program and for the Council. Hastings explained that the Science Program has a technical writer on staff to assist with communications to the public; however, that person does not have a scientific background. The Council also has a public information officer, but again he does not possess a scientific background. Dahm's vision for the Science Program includes plans for trying to find communications staff with more science and technical backgrounds.

Collier then asked about the Science Plan. It is intended that the next Lead Scientist will coordinate its development and that the Delta ISB will review drafts. The Science Plan will provide the framework within which all of the ongoing scientific activities will be coordinated. Collier also indicated that the need for a Science Plan should be clearly stated in the governance chapter.

Chapter 3: Governance: Implementation of the Delta Plan

The governance chapter emphasizes criteria and processes for determining when a plan or project is consistent with the Delta Plan. However, this chapter does not include a discussion about the governance needed to support best available science and adaptive management. The Board felt that those needs should be elaborated more fully in the Science Plan. The Delta ISB also felt that this chapter should include discussions about training scientists-managers in adaptive management, coordinating monitoring programs among the agencies, encouraging communication between managers and scientists across agencies and to the public, and specifying the role of the Delta Science Program in Delta focused science efforts.

Atwater stated that using "Delta" to include the Delta and Suisun Marsh was confusing making it difficult to refer to the Delta by itself. He recommended that the writers always use the "Delta and Suisun Marsh" when referring to both.

Hastings informed the Delta ISB that as currently planned, consistency determinations will only be based on the policies. However, she is assuming that staff will also track consistency of projects with the recommendations on a more informal basis.

Healey felt that the processes and timelines associated with consistency determinations and appeals should be clarified. The Delta ISB would also like to have clarification of how the BDCP will be incorporated into the Delta Plan.

Chapter 4: A More Reliable Water Supply for the Delta

Chapter focuses on increasing water supply reliability by reducing reliance on water from the Delta through increased water use efficiency, regional self-reliance, increased storage, and improved conveyance. The Delta ISB found this chapter to be a considerable improvement over earlier versions, yet still found weaknesses.

Atwater read comments from Mount about the unclear wording used in this chapter. Mount said it appears that the Delta Plan is being held hostage to other agencies' plans, and cited flow criteria as an example.

Meyer stated that several of the recommendations were difficult to understand, but in particular pointed out one that she considered completely impossible to interpret: WR R9 on page 93, lines 36-41. As currently written, it implies that users will receive more water each year and is inconsistent with the concept of increased local self-sufficiency.

Mount, via Atwater, was concerned that if water is used more efficiently, the communities will simply find other ways to use the water.

Healey thought that the chapter should include a discussion of the trade-offs between human and ecosystem water needs. Consideration of the needs of the environment with the needs of the human population with respect to water supply would be consistent with the coequal goals. Houde said that environmental impacts of depletion of groundwater should also be looked at.

Collier, Resh, and Houde suggested that the following might be considered Science Needs: 1) assessment of the flows needed to protect the Delta and its ecological resources, 2) the effect of climate change on water supply, 3) assessing if X2 is a meaningful parameter, and 4) the impacts of groundwater overdraft.

Chapter 5: Restore the Delta Ecosystem

The Delta ISB noted that this chapter relies on a number of other programs and plans including the Ecosystem Restoration Program (ERP) Conservation Strategy and the BDCP. Members felt that the Delta Plan needs to be more clear about which plans and parts of plans are/will be incorporated.

Meyer considered the chapter to be weak on specifics and to be too heavily reliant on other programs and plans that are not yet completed. She found that the chapter was not clear about

how current knowledge regarding the historical Delta would be used to guide restoration activities. She felt there was a good discussion of landscape ecology, but that the concept was not carried through to the development of the policies and recommendations found later in the chapter. She was uncomfortable with the emphasis on riverine flows as there was no discussion of estuarine flows. Other comments included that the restoration goals include little discussion of how adaptive management will be incorporated, invasive species is the only stressor discussed, the terrestrial ecosystem is neglected, and the performance measures are incomplete.

Healey said the segregation of human and environmental water is highly apparent in this chapter and that more work needs to be done to integrate ideas and concepts among the chapters. He further recommended that this chapter clearly identify that the approach to restoration projects is intimately connected to the flow regime.

Weins added that development of performance measures and implementation of adaptive management are dependent on the identification of precise targets. He also noted that native species will be moving in response to climate change and asked how they will be considered as referring to them as “invasive” would not be appropriate.

Public comment on this agenda item provided by:

Connie Ford, Sacramento County Water Resources: Ford stated that she was concerned about the quality of science that was used in developing the water quality related recommendations contained in the Delta Plan. She explained that her understanding was that most of the responsibility for water quality related policy was being done by the regional water boards. Her main concern was in regard to documents prepared by the regional boards that were not peer reviewed, providing the “Pulse of the Delta” report as an example. It is her understanding that this non-peer-reviewed information then forms the basis of permit requirements.

6. Break into small group work session(s) to prepare draft comments

At the beginning of the meeting, the Delta ISB determined that they would not break into small groups but would discuss the Delta Plan as a single group.

7. Report out to larger group

Reporting out to the larger group was not necessary as the Board did not break up into small groups to discuss various chapters of the Delta Plan.

8. Public Comment (For matters that were not on the agenda, but within subject matter jurisdiction of the Delta ISB.)

No public comment was provided at this time.

9. Adjourn public meeting at 3:30 p.m.

The public portion of the meeting was adjourned at 3:30 p.m.

10. CLOSED SESSION – PERSONNEL MATTERS (per Government Code Section 11126(a))

Day 2: September 2, 2011 - (9:00 a.m. – 4:30 p.m. PDT)

1. Welcome

The meeting was called to order at 9:00 a.m., September 2, 2011, by the Chair of the Delta Independent Science Board (ISB), Dr. Richard Norgaard. Eight members of the Delta ISB were present for the meeting: Brian Atwater, Elizabeth Canuel, Tracy Collier, Michael Healey, Edward Houde, Judy Meyer, Richard Norgaard, and Vince Resh. Jeffrey Mount and John Wiens were absent from the meeting.

No new conflicts or need for new disclosures were disclosed for any of the present Board members.

Delta Science Program Staff in attendance:

Cliff Dahm, Marina Brand, Lauren Hastings and Gina Ford

2. Review previous day's work

Norgaard stated that in the prior day's closed session the Delta ISB decided to recommend that the Delta Stewardship Council offer Dr. Peter Goodwin the position of Lead Scientist for the Delta Science Program.

Norgaard opened this item to the other members of the Science Board, asking if they had anything to add. Healey said that he thought it should be mentioned that they spent some time discussing how the Lead Scientist position could be made more attractive to potential candidates because as it is currently, the lead scientist position has no career benefit to candidates. Several ideas were discussed including establishing a stronger connection to the UC system and adding one to two Fellows that could assist in writing papers or other type of scientific document. The Board agreed that their recruitment for the position should be continuous.

Also completed the prior day was the Board's review of the preface through Chapter 5 of the fifth staff draft of the Delta Plan. Norgaard then initiated the continuation of the Board's review of the Delta Plan and started with Chapter 6.

Chapter 6: Improve Water Quality to Protect Human Health and the Environment

This chapter first provides an overview of water quality issues in the Delta and then focuses on three water quality concerns; salinity, drinking water quality, and environmental water quality.

The Delta ISB liked the water quality chapter and were pleased with how well developed it was for the first full draft of this chapter. Board members considered salinity to be a subset of both

drinking water and environmental water quality, and therefore did not think it should be treated as a separate issue. However, if it is kept as a separate issue, Collier recommended that the rationale for doing so be provided in the text. Although freshwater inflows are a dominant factor in salinity and its distribution in the Delta, other factors should be evaluated as well such as changing channel geometry and construction of a peripheral canal. The Board also felt that while salinity issues were identified well, the solutions were not.

The drinking water quality and environmental water quality sections were found to be more developed, particularly the environmental water quality section, than in previous versions of the Delta Plan. However, the Delta ISB questioned the amount of attention given to environmental water quality versus drinking water quality due to the range of issues surrounding the latter.

Collier stated that ecological protection standards should be both numerically based and narrative. This is due to a lack of full understanding of the numeric levels that cause impact at an organismic level. However, numeric standards work well for human drinking water standards. Numerical values are known for many nutrients, but they are not as well known or understood for contaminants.

Meyer said that the chapter reads like the author views flow as a solution to controlling salinity.

Collier realized that in several instances the Delta Plan could not develop a policy or recommendation due to the subject matter being outside of the Delta Stewardship Council's authority. He felt that these types of situations should be clearly stated in the Plan. This would provide clarity that the recommendation or policy was not simply being ignored, but was another entity's responsibility.

The Delta ISB had some discussion as a group about which should be coming first, recommendations on water policy from the Delta Plan or flow criteria from the Regional Water Quality Control Board. However, it was a moot point since the legislation calls for the Delta Plan to be complete and implemented by January 2012 and the flow criteria will not be complete prior to that date. They also questioned the order in which the flow criteria will be developed and felt that it would make more sense if the flow criteria were first established in the tributaries and then the Delta rather than as currently required in the legislation (Delta first, then tributaries).

Additional comments that various members of the Board made were 1) include a discussion of the impact of dissolved organic matter, 2) make recommendations as specific as possible, 3) describe how the decisions were made regarding selecting contaminants of concern and indicate whether or not these are the highest priority in the Delta, 3) consider asking the IEP Lead Scientist to review this chapter as it relates to the pelagic organism decline, 4) determine if petroleum refineries are still a major source of selenium, 5) include a discussion how adaptive

management will be implemented in this chapter, 6) include a discussion of dissolved oxygen, 7) include a conceptual model of how bioaccumulation works, 8) include numeric targets in the performance measures, and 9) include a broad integrating statement regarding how water quality affects everything, especially the ecosystem (Chapter 5).

The Board noted that conceptual models are lacking in most of the chapters and wanted to know why the Delta Regional Ecosystem Restoration Implementation Plan (DRERIP) conceptual models were not included in this chapter or any other chapter of the Delta Plan, suggesting that they could be introduced in Chapter 2. Hastings responded that the DRERIP models are not yet published in peer reviewed journals and only exist in the grey literature. Therefore, it was decided to not include them at this time in the Delta Plan.

Chapter 7: Reduce Risk to People, Property, and State Interests in the Delta

The Board agreed that this chapter was not integrated with the rest of the Delta Plan. Other chapters of the Plan are not mentioned, nor are the coequal goals. The chapter was also found to be lacking in context. Overall both Atwater and Mount considered the chapter to be in dire need of revisions to come up to the standards set by previous chapters. Issues they mentioned included a lack of discussion regarding probability (the other part of risk), no discussion of the history of levee failures in the Delta, little discussion of subsidence, and no recommendations for subsidence reduction programs. Scientific peer-reviewed references were largely absent from the citations, and of those that were present one was incorrectly cited. There is a missing element of consequences in the discussion, which is needed to show the full spectrum of risk. They also felt that RR R12 presented a potential conflict with future flow recommendations and that this recommendation should be reconciled with ER P1.

Houde said that he found this chapter non-informative in comparison to other chapters and that it contained virtually no scientific information on the subject. He also stated that other types of risk modeling needs to be performed, not just that associated with levee failures.

Overall the Science Board considered this chapter to be inadequate for the needs of the Delta Plan. Science needs that were identified included an ecological risk assessment, the analysis of the impacts that could be expected from modifications and upgrades to levees, and the consequences of levee failure.

Chapter 8: Protect and Enhance the Unique Cultural, Recreational, Natural Resources, and Agricultural Values of the California Delta as an Evolving Place

This chapter looks at the Delta as a socioecological system. Addressed are the livelihoods of specific people, the sustainability of particular economic sectors, the future of specific legacy towns, and the culture of Delta communities. Norgaard found the chapter difficult to review due to the shortage of good data, especially historical data.

Norgaard stated that references are minimal, with no real studies to rely upon for statistics or other scientific methods to analyze the demographics. The central theme of the chapter is the Delta Protection Commission's Economic Sustainability Plan (ESP) which specifies actions that should be taken outside of the Delta to sustain the Delta. The ESP contains a lot of "ifs" and relies on outside funding sources. The ESP does not discuss or even acknowledge the potential for levee failures. Norgaard found that a minimal number of studies and statistics were used to write Chapter 8. He felt that the chapter should identify additional scientific socioeconomic studies that need to be done in order to support continued protection of the Delta as a place.

Comments from other members of the Board were that the chapter 1) establishes a conflict between acknowledging the Delta as a place versus the desire to maintain the status quo, 2) does not contain any recommendations regarding urban encroachment, 3) establishes a conflict between maintaining/increasing agricultural acreage versus the need for increased habitat restoration, and 4) that the performance measures do not support achieving the coequal goals.

Chapter 9: Finance Plan Framework to Support Coequal Goals

This chapter had not been assigned to any of the members for review; however, several members had reviewed it and offered their comments. Meyer pointed out that carbon offsets are mentioned in this chapter and wondered why they were not mentioned in chapters 5 or 7. Canuel noted that carbon offsets is an evolving market with little current understanding of how they will really work. Collier stated that the chapter should include a discussion of how the Science Program will be funded to demonstrate that the Council, via the Delta Plan, understands the importance of science in the future.

Summary of "Big Picture" Comments

1. Every chapter must relate to the other chapters.
2. Would like to see a case study of Adaptive Management attached to each chapter or at least a description of the possible Adaptive Management approach would be taken tied back to Chapter 2.
3. Each chapter should provide the relevant big picture science needs.
4. Include an overarching conceptual model for the Delta Plan.
5. Coordination of monitoring programs.
6. Clarification of what is and what is not part of the Delta Plan, in relation to other plans and programs.

Public comments on this agenda item provided by:

Kurt Ohlinger, Sacramento Regional County Sanitation District: Ohlinger provided comment on an article mentioned during the Lead Scientist report on the first day of the meeting. Ohlinger had read the Kearney, et al. paper "Freshwater river diversions for marsh restoration in

Louisiana: Twenty-six years of changing vegetative cover and marsh area” and felt it important to relate to the Delta ISB that the authors of the paper actually only speculated as to why their restoration efforts failed. There had been no study leading to the conclusion that the restoration failure could be blamed on high nutrient levels in the aquatic system. Also, based on the article and his knowledge of the San Francisco Bay and Delta, the two systems are not comparable. The Gulf has a large hypoxic zone whereas the Delta does not; therefore failure in Louisiana does not necessarily mean that there will be failure in the Delta.

3. Report out to larger group

This was not needed as the Delta ISB did not break up into small groups.

4. Public Comment (For matters that were not on the agenda, but within subject matter jurisdiction of the Delta ISB.)

Valerie Connor, State and Federal Water Contractors: In relation to the Delta ISB’s review of monitoring programs, Connor wanted to provide some input on a review process she had experience with while working at the State Water Resources Control Board, which seemed to be successful. They used a two-step process for review. The first step was a preliminary report where staff was encouraged to be very critical of the item being reviewed, and to provide who/what was being reviewed time to respond. The second step was to review the revised document and determine if the advice provided in step 1 had been implemented, giving staff a chance to see if their comments had improved the document.

5. Preparation for next Delta ISB meeting

Hastings opened this item by discussing the potential agenda for the October Delta ISB meeting. As required by the Delta Reform Act of 2009, the Board is charged with reviewing various scientific programs related to research, monitoring and assessment in the Delta. In order to do this, the Board needs to be made aware of the potential programs that exist. Dahm discussed various approaches that could be taken in order to “educate” the Board including organizing them by topic, agency, or other means as appropriate. He told the Delta ISB that he thought the goal would be for them to get a sense of what work is being done and by whom. He also suggested limiting it to 10-12 programs in order to keep from feeling overwhelmed.

Norgaard stated that his sense of “science programs” as stated in the Delta Reform Act was that it was not very well defined and therefore subject to interpretation by the Delta ISB as to what exactly they might consider to be a program that was scientific in nature. Hastings then read the actual passage from the legislation to the Board:

“The Delta Independent Science Board shall provide oversight of the scientific research, monitoring, and assessment programs that support adaptive management of the Delta through periodic reviews of each of those programs that shall be scheduled to ensure that all Delta scientific research, monitoring, and assessment programs are reviewed at least once every four years.” (WC 85280(a)(3))

Resh suggested that instead of making it a dog and pony show of all the various programs that they might review as a Board that it would be helpful to have a written document with a compilation of summaries to read ahead of time.

Meyer suggested something similar to Resh, except she also added a list of questions that she would like to see answered in regard to the programs before hearing their presentations:

1. How is modeling a part of the project/program? What models, if any, do you use?
2. What monitoring is done as a part of the project/program? Who uses the information collected, and how?
3. How does the program collaborate with universities/academia?
4. In what ways does the program support the use of Adaptive Management, especially in regard to the Delta Plan?

Collier would like to see an overview of the various monitoring programs like IEP and UMARP. Hastings told the Board that IEP has already started work on compiling a comprehensive list of the various monitoring programs currently in place. Healey would like to see the various programs that were initiated under CALFED, and have an update as to their current status and what has been learned. Other potential programs that were mentioned were VAMP, DWR's levee program, and the Delta Risk Management Strategy.

It was agreed that on the first day of the October meeting, Science Program staff will present an overview of relevant programs as they relate to Chapters 4-7 of the Delta Plan. On the second day, the Board will review the history of adaptive management programs in the Delta, select those programs that they will review and prioritize them.

Norgaard wanted information about what the Board will need to do in order to review the Draft EIR for the BDCP when it becomes available. Hastings noted that the Science Program will be facilitating a review of the BDCP Effects Analysis Conceptual Foundation and Analytical Framework and the Entrainment Appendix. It is anticipated that drafts of these two documents will be available by the end of September, and that the review will be scheduled for sometime in October 2011.

The Board also requested that Delta Science Program staff initiate a Doodle Poll to determine the best potential dates for a January 2012 meeting to allow for a discussion with Peter Goodwin (assuming he accepts the position as Lead Scientist) while Cliff Dahm is still available to attend .

Meeting adjourned at 12:15 p.m.